

WHAT IS CLAIMED IS:

1                   1.     A method for closing a left atrial appendage of a patient's heart,  
2     said method comprising:  
3                   positioning a closure instrument through a percutaneous passage beneath  
4     the rib cage, over an epicardial surface, and adjacent to the left atrial appendage; and  
5                   closing the left atrial appendage using the closure instrument.

1                   2.     A method as in claim 1, wherein positioning comprises making an  
2     incision between a costal cartilage and a xiphoid of the patient and placing an access  
3     sheath through the incision into a pericardial space.

1                   3.     A method as in claim 2, wherein positioning further comprises  
2     advancing a distal end of the closure instrument through the sheath, into the pericardial  
3     space, and over an epicardial surface to an atrioventricular groove of the heart.

1                   4.     A method as in claim 3, wherein closing comprises looping,  
2     suturing, stapling, clipping, riveting, clamping, or fusing the left atrial appendage at a  
3     neck region thereof.

1                   5.     A method as in claim 4, wherein closing further comprises  
2     grasping the left atrial appendage prior to closing the neck region thereof.

1                   6.     A method as in claim 1, wherein the method is performed while the  
2     patient's heart is beating.

1                   7.     A method as in claim 6, wherein the method is performed while  
2     both lungs of the patient remain inflated.

1                   8.     A method as in claim 7, wherein the method is performed while the  
2     patient is under a local anesthetic.

1                   9.     An improved method for closing a left atrial appendage of a heart,  
2     said method being of the type wherein a closure element is placed over an exterior of the  
3     appendage while the patient's chest remains closed, wherein the improvement comprises  
4     advancing the closure element from beneath the rib cage over an epicardial surface to the

5 exterior of the left atrial appendage prior to placing the closure element over the left atrial  
6 appendage.

1 10. A device for closing a left atrial appendage of a heart, said device  
2 comprising:

3 -- a shaft having a proximal end and a distal end, wherein the distal end is  
4 adapted to percutaneously enter a pericardial space, advance over an epicardial surface,  
5 and approach the exterior of the left atrial appendage; and

6 means carried by the shaft for closing the left atrial appendage when the  
7 distal end of the shaft is positioned adjacent to the left atrial appendage.

1 11. A device as in claim 10, wherein the shaft has a length in the range  
2 from 10 cm to 40 cm, a width in the range from 2 mm to 20 mm, and a thickness in the  
3 range from 1 mm to 10 mm.

1 12. A device as in claim 10, wherein the shaft is curved over its length.

1 13. A device as in claim 12, wherein the curvature of the shaft is  
2 adjustable.

1 14. A device as in claim 12, wherein the device has a crescent-shaped  
2 cross-section.

1 15. A device as in claim 10, wherein the distal end is configured to lie  
2 within an atrioventricular valve groove of the heart.

1 16. A device as in claim 15, wherein the shaft has at least one lumen  
2 which extends from the proximal end to exit ports spaced inwardly from the distal end by  
3 a distance in the range from 0.5 cm to 5 cm.

1 17. A device as in claim 16, wherein the closing means extends  
2 through the at least one lumen.

1 18. A device as in claim 17, wherein the closing means comprises a  
2 grasping tool which extends through one of the lumens, said grasping tool being adapted  
3 to temporarily grasp the left atrial appendage.

1 19. A device as in claim 18, wherein the closing means further  
2 comprises a closing tool adapted to permanently close the left atrial appendage while it is  
3 being temporarily closed with the grasping tool.

1 20. A device as in claim 12, wherein the shaft has at least a second  
2 lumen.

1 21. A device as in claim 20, further comprising a viewing scope  
2 positionable through the second lumen in the shaft.

1 22. A device as in claim 10, further comprising a handle attached to the  
2 proximal end of the shaft.

1 23. A device as in claim 21, wherein the shaft has at least a third lumen  
2 for irrigating the pericardial space.

1 24. A device as in claim 10, further comprising an expander for  
2 separating the pericardium in the region of the left atrial appendage.

1 25. A device as in claim 24, wherein the expander comprises an  
2 inflatable balloon.

1 26. A kit comprising:  
2 a closure device; and  
3 instructions for use setting forth a method as in claim 1.

1 27. A method as in claim 1, further comprising separating the parietal  
2 pericardium from the visceral pericardium near left atrial appendage prior to closing the  
3 left atrial appendage to create a space over the atrial appendage.

1 28. A method as in claim 27, further comprising viewing the atrial  
2 appendage through the space.